Image AFT/2800

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **LONG HAI WU**

Serial No.: **09/817,912** Group Art Unit: **2879**

Filed: **MARCH 26, 2001** Examiner: **HODGES, MATTHEW P**

Attorney Docket No.: **DEEP-1019US**

For: **ELECTROLUMINESCENCE ELEMENT AND METHOD FOR FABRICATING THE SAME**

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Approved For Entry 2/17/04

AFTER FINAL AMENDMENT UNDER 37 C.F.R. §1.116

Sir:

In response to the Office Action dated December 5, 2003, please amend the above-captioned patent application as follows:

Amendments in the Claims are reflected in the listing of claims that begins on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

CERTIFICATE OF MAILING UNDER 37 C.F.R.§1.8

I certify that this document, along with any document referred to as being attached, is being deposited with the U.S. Postal Service as first class mail on February 3, 2004, under 37 C.F.R. §1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

EDNA SCHMITTINGER
Name of person signing document

Edna Schmittinger
Signature of person signing document

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A polarized electroluminescence element for a display comprising:

a substrate;

an orientation-inducing layer situated on said substrate and in a first direction of orientation obtained by ~~exposure~~ exposing to light; and

a light-emitting layer situated on said orientation-inducing layer and made of a mixture of an electroluminescent material and an oriented material for emitting polarized electroluminescence, wherein said electroluminescent material and said oriented material are in a second direction of orientation corresponding to said first direction of orientation, and said electroluminescent material is selected from the group consisting of polyimide and polyphenylamide.

2. (Original) The polarized electroluminescence element according to claim 1, wherein said substrate is a glass plate.

3. (Original) The polarized electroluminescence element according to claim 1, wherein said orientation-inducing layer is a conductive layer.

4. (Original) The polarized electroluminescence element according to claim 3, wherein said orientation-inducing layer is made of polyimide.

5. (Original) The polarized electroluminescence element according to claim 1, wherein said second direction of orientation is parallel to said first direction of orientation of said orientation-inducing layer.

6. (Original) The polarized electroluminescence element according to claim 1, wherein said oriented material of said light-emitting layer is guided by said orientation-inducing layer to align

in said second direction of orientation and perform electron-hole transport in a direction perpendicular to said light-emitting layer.

7. (Original) The polarized electroluminescence element according to claim 6 wherein said oriented material of said light-emitting layer is discotic liquid crystal molecules.

8. (Original) The polarized electroluminescence element according to claim 1, wherein said electroluminescent material of said light-emitting layer is guided by said oriented material to display in said second direction of orientation.

9. (Previously presented) A polarized electroluminescence element for a display comprising:

a substrate;

an orientation-inducing layer situated on said substrate and in a first direction of orientation; and

a light-emitting layer situated on said orientation-inducing layer and made of a mixture of an electroluminescent material and an oriented material for emitting polarized electroluminescence, wherein said electroluminescent material of said light-emitting layer is one of polyimide and polyphenylamide, said electroluminescent material and said oriented material are in a second direction of orientation corresponding to said first direction of orientation and said electroluminescent material of said light-emitting layer is guided by said oriented material to display in said second direction of orientation.

10. (Previously presented) A polarized electroluminescence element for a display comprising:

a substrate;

an orientation-inducing layer situated on said substrate and in a first direction of orientation; and

a light-emitting layer situated on said orientation-inducing layer and made of a mixture of an electroluminescent material and an oriented material for emitting polarized electroluminescence, wherein said electroluminescent material and said oriented material are in a second direction of

orientation corresponding to said first direction of orientation, and said light-emitting layer has a structure of cross-linking polymer.

11. (Original) The polarized electroluminescence element according to claim 1, wherein said display is an electroluminescence display.

12. (Original) The polarized electroluminescence element according to claim 1, wherein said display is a liquid crystal display.

13. (Currently amended) A polarized electroluminescence element used in a backlight source of a display, comprising:

a substrate; and

a light-emitting layer situated on said substrate and made of a mixture of an electroluminescent material and discotic liquid crystal molecules in a direction of orientation for emitting polarized electroluminescence and performing electron-hole transport in a direction perpendicular to said light-emitting layer, wherein said direction of orientation is obtained by ~~exposure~~ exposing to light and said electroluminescent material is selected from the group consisting of polyimide and polyphenylamide.

14. (Withdrawn) A method for fabricating a polarized electroluminescence element comprising steps of:

a) providing a substrate;

b) forming an orientation-inducing layer on said substrate;

c) performing an orientation-inducing process on said orientation-inducing layer to make said orientation-inducing layer align in a first direction of orientation;

d) providing a mixture of an electroluminescent material and an oriented material;

e) applying said mixture on said orientation-inducing layer to form a light-emitting layer; and

f) inducing said oriented material of said light-emitting layer by said orientation-inducing layer to align in a second direction of orientation corresponding to said first direction of orientation and inducing said electroluminescent material of said light-emitting layer to align in said second direction of orientation.

15. (Withdrawn) The method according to claim 14, wherein said orientation-inducing layer formed on said substrate is performed by coating.

16. (Withdrawn) The method according to claim 14, wherein said orientation-inducing process is performed by exposure to light.

17. (Withdrawn) The method according to claim 14, wherein said orientation-inducing process is performed by rubbing.

18. (Withdrawn) The method according to claim 14, wherein said mixture is formed on said orientation-inducing layer by coating.

19. (Withdrawn) The method according to claim 14, wherein said orientation-inducing process is performed at a temperature ranged from 80°C to 120°C.

20. (Withdrawn) The method according to claim 14, wherein said electroluminescent material and said oriented material comprise photo-polymerization functional groups.

21. (Withdrawn) The method according to claim 14 further comprising a step of cross-linking said electroluminescent material and said oriented material by exposure to light.

22. (Withdrawn) The method according to claim 14, wherein said second direction of orientation is parallel to said first direction of orientation.

23. (Withdrawn) A method for improving emission efficiency of a light-emitting layer in a polarized electroluminescence element comprising steps of:

a) forming a light-emitting layer by mixing an electroluminescent material and an electron-hole transporting material; and

b) inducing said electron-hole transporting material by an orientation-inducing layer to align in a direction of orientation, and inducing said electroluminescent material to align in said direction of orientation.

24. (Withdrawn) The method according to claim 23, wherein said electron-hole transporting material is discotic liquid crystal molecules.

25. (Canceled)

26. (New) The polarized electroluminescence element according to claim 10, wherein said substrate is a glass plate.

27. (New) The polarized electroluminescence element according to claim 10, wherein said orientation-inducing layer is a conductive layer.

28. (New) The polarized electroluminescence element according to claim 27, wherein said orientation-inducing layer is made of polyimide.

29. (New) The polarized electroluminescence element according to claim 10, wherein said second direction of orientation is parallel to said first direction of orientation of said orientation-inducing layer.

30. (New) The polarized electroluminescence element according to claim 10, wherein said oriented material of said light-emitting layer is guided by said orientation-inducing layer to align in said second direction of orientation and perform electron-hole transport in a direction perpendicular to said light-emitting layer.

31. (New) The polarized electroluminescence element according to claim 30 wherein said oriented material of said light-emitting layer is discotic liquid crystal molecules.

32. (New) The polarized electroluminescence element according to claim 10, wherein said electroluminescent material of said light-emitting layer is guided by said oriented material to display in said second direction of orientation.